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Development of probiotic dairy beverages: Rheological properties and application of mathematical models in sensory evaluation. *By Castro et al., page 16.* The effect of whey level in the sensory acceptance of probiotic whey beverages was assessed by using mathematical models. Whey beverages were formulated with 0, 20, 35, 50, 65, and 80% (vol/vol) added *Lactobacillus acidophilus* and the sensory evaluation results were assessed by using survival analysis, minimal significant difference, and mean global acceptance. Formulations with 49 and 65% (vol/vol) added *L. acidophilus* were selected by the Weibull distribution and mean global acceptance, respectively. Acceptance of the beverages containing higher counts of *L. acidophilus* showed that whey drinks are good carriers of probiotics, regardless of the whey level in the formulation.

Characterization by solid-phase microextraction-gas chromatography of the volatile profile of protected designation of origin Montasio cheese during ripening. *By Innocente et al., page 26.* We characterized the volatile compounds present in Montasio, a protected designation of origin Italian semihard cheese. We describe the volatile profile and its evolution during the ripening period (from 60 to 365 d). Over the years, Montasio cheese has been extensively investigated in terms of its chemical composition, ripening processes, and texture and sensory profiles. This work contributes to defining quality criteria for Montasio cheese.

Effect of iron saturation level of lactoferrin on osteogenic activity in vitro and in vivo. *By Wang et al., page 33.* Lactoferrin (LF), an iron-binding glycoprotein of the transferrin family, is a promising therapeutic target in bone repair and osteoporosis. Many studies have suggested that LF with different iron saturation levels exert different physiological functions. However, the effect of iron saturation level on the osteogenic activity of LF was unclear. Our results provide the direct evidence that the osteogenic activity of LF decreased with increasing iron saturation level in vitro and in vivo, which may be related to its conformational change triggered by iron content.

Genetic analysis of rennet coagulation time, curd-firming rate, and curd firmness assessed over an extended testing period using mechanical and near-infrared instruments. *By Cecchinato et al., page 50.* Extending the standard 30-min testing time of the lactodynamographic test allowed us to avoid noncoagulating samples, to measure curd-firming time on almost all samples, and to estimate their genetic parameters. The milk coagulation properties measured by a mechanical lactodynamograph or estimated by a near-infrared lactodynamograph can be considered as different traits, with the partial exception of rennet coagulation time.

In vitro gastric digestion of heat-induced aggregates of β-lactoglobulin. *By Peram et al., page 63.* The 3-dimensional structure of native proteins is altered by food processing treatments such as heating and high pressure, and structural changes may be desirable or undesirable. Heating produces an array of denatured proteins and aggregates of various sizes. Heated β-lactoglobulin has higher gastric digestibility than the native protein, which is particularly resistant because of its acid-stable structure. This study examined heat-induced structural modifications to β-lactoglobulin, such as denaturation and aggregation, and measured the in vitro digestibility of denatured and aggregated species. This information will be useful in formulating food products with improved nutritional properties.

Identification of lactoferrin peptides generated by digestion with human gastrointestinal enzymes. *By Furlund et al., page 75.* Bioactive peptides released from lactoferrin, such as lactoferricin and lactoferrampin, have demonstrated effects against various bacteria, and may be important in prevention of pathogenic infections. In this study, we present the degradation and peptide formation of bovine lactoferrin following in vitro digestion with human gastric and duodenal juices. The results were compared with in vivo digestion of bovine lactoferrin. Known bioactive peptides such as lactoferricin and lactoferrampin were not detected in our study; however, novel peptides not previously observed using nonhuman enzymes were detected.

Short communication: **Effect of supplementation with *Lactobacillus casei* Shirota on insulin sensitivity, β-cell function, and markers of endothelial function and inflammation in subjects with metabolic syndrome—A pilot study.** *By Tripolt et al., page 89.* Based on animal studies, intake of a probiotic containing a special strain of the bacterium *Lactobacillus casei* Shirota (LcS) was thought to improve insulin sensitivity, β-cell function, endothelial function, and inflammation in humans. The objective of this study was to determine the effects of LcS supplementation over 12 wk on these parameters. We performed a randomized-controlled study in 30 subjects and showed that intake of LcS for 12 wk did not improve insulin sensitivity, β-cell function, endothelial function, or inflammation markers.

Short communication: **Bacteriocin KC24 produced by *Lactococcus lactis* KC24 from kimchi and its antilisterial effect in UHT milk.** *By Han et al., page 101.* Bacteriocin and bacteriocin-producing strains have been used in dairy products to control pathogens. Bacteriocin KC24 produced by *Lactococcus lactis* KC24 has antimicrobial effects and is stable to heat and pH. Use of bacteriocin KC24 completely inhibited the growth of *Listeria monocytogenes* in UHT milk for 14 d at 4°C. Therefore, bacteriocin KC24 may prove useful in improving the safety of dairy products.

Short communication: **Reactivity of diacetyl with cleaning and sanitizing agents.** *By Rincon-Delgadillo et al., page 105.* Long-term exposure to high levels of butter-flavoring chemical vapors, including diacetyl, has been associated with severe lung disease. Engineering and work practice controls, including adequate cleaning practices, are the primary methods for controlling worker exposure to diacetyl. The strong oxidative capacity of cleaning chemicals and the reactive propensity of carbonyls suggest that some cleaning chemicals may be more effective than others at reducing the presence of dicarbonyls. We studied the reactive chemistry of common industrial cleaning and sanitizing agents with diacetyl and describe the final products of such reactions.

Regulation of lipid synthesis by liver X receptor α and sterol regulatory element-binding protein 1 in mammary epithelial cells. *By Oppi-Williams et al., page 112.* Mammary gland lipid synthesis is a complex process involving multiple lipogenic enzymes and, potentially, several transcription factors. We investigated the roles of the transcription factors liver X receptor α (LXRα) and sterol regulatory element-binding protein-1 (SREBP1) in the activation of lipogenic genes. An LXRα activator and small interfering RNA specific for these transcription factors were used to knock down the expression of both LXRα and SREBP1, and the messenger RNA abundance of genes involved in lipid synthesis was determined. Although LXRα did not appear necessary for basal gene transcription, in the presence of SREBP1 knock down, mRNA abundance of acetyl-CoA carboxylase, fatty acid synthase, and diacylglycerol acyltransferase increased in response to LXRα activation, indicating that these genes can be directly regulated by LXRα.

The use of equine chorionic gonadotropin in the treatment of anestrous dairy cows in gonadotropin-releasing hormone/progesterone protocols of 6 or 7 days. *By Bryan et al., page 122.* In seasonally calving dairy herds, one of the major causes of low reproductive performance in a short breeding season is postpartum anestrus. This study compared variations in the treatment and breeding of anestrous dairy cows utilizing progesterone, gonadotropin-releasing hormone (GnRH), prostaglandin $F_{2\alpha}$, and equine chorionic gonadotrophin (eCG). The addition of eCG significantly improved all measured reproductive outcomes in GnRH/progesterone-based treatment protocols of both 6 and 7 d. The use of eCG in breeding regimens improves reproductive efficiency in seasonal-calving, anestrous dairy cattle.

Pain management with flunixin meglumine at dehorning of calves. *By Huber et al., page 132.* Dehorning calves is a common procedure in modern dairy farming. It is generally accepted that a local anesthesia before dehorning is essential to manage pain. Postoperative inflammatory pain should be treated by using a nonsteroidal antiinflammatory drug (NSAID). The objective of this study was to determine the effect of the NSAID flunixin meglumine at dehorning on cortisol concentrations in serum. Selected behavioral characteristics and heart and respiratory rates were monitored. Cortisol concentrations indicated that using flunixin meglumine before dehorning can reduce pain after dehorning.

Nitrogen partitioning and milk production of dairy cows grazing simple and diverse pastures. *By Totty et al., page 141.* Highly concentrated nitrogen in urine patches of dairy cows is considered to have a negative environmental impact due to the high leaching rate, particularly during periods of higher rainfall. This study examined whether nitrogen lost in urine of pastured dairy cows could be reduced by altering the composition of the plant species. Cows receiving the highly diverse pasture had a higher milk protein production and lower urine nitrogen output, demonstrating a role for diverse pastures in altering nitrogen partitioning of the lactating dairy cow.

Localization of ghrelin and its receptor in the reproductive tract of Holstein heifers. *By Deaver et al., page 150.* In cattle, negative energy balance is associated with decreased fertility. The hormone ghrelin is secreted in response to negative energy balance and it has been shown to affect reproduction in several species. Given this relationship, it has been hypothesized that ghrelin may affect reproduction in dairy cattle. The current study showed that mRNA and protein of ghrelin and its active receptor, growth hormone secretagogue receptor 1A, are expressed throughout all reproductive tissues of dairy heifers. This study represents a first step toward deciphering the role of ghrelin in the metabolic regulation of reproduction in cattle.

Peripartum infection with *Streptococcus uberis* but not coagulase-negative staphylococci reduced milk production in primiparous cows. *By Pearson et al., page 158.* Milk yield and somatic cell